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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,868	08/01/2003	Byoung Own Min	2336-201	9162

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EXAMINER	
LAXTON, GARY L	

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/631,868	MIN, BYOUNG OWN	
	Examiner	Art Unit	
	Gary L. Laxton	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-8 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,4,5 and 8 is/are rejected.

7)☒ Claim(s) 2,3,6 and 7 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 01 August 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 8/1/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US 4,344,122) in view of Adamson (US 6,181,066) and further in view of Kastner (US 6,570,334).

Jones discloses an inverter comprising: a switch (Q1) for switching a direct current (C3) operating voltage in response to a pulse width modulation (9) drive signal; a rectifier (CR1) for rectifying an output voltage from the switch (Q1); a transformer driver (Q5, Q6) for converting an output voltage from the rectifier (CR1) into an alternating current (AC) voltage; transformer means (4) for boosting an output AC voltage from the transformer driver (Q5, Q6) to levels of a lamp operating voltage; and an output driver for supplying the PWM drive signal to the switch in normal operation.

However, Jones does not disclose a complementary lamp operating voltage, and wherein the transformer means including a plurality of transformers connected in parallel to the transformer driver and driven in pairs; lamp means including a plurality of lamps, each of the lamps being operated by a corresponding one of the transformers of the transformer means; operation stop control means for detecting a voltage at a midpoint of secondary windings of each of the transformer pairs in the transformer means, determining from the detected voltage whether a fault exists in the transformer means and outputting an operation stop signal upon determining that the fault exists in the transformer means; and a switch-off signal to the switch upon receiving the operation stop signal from the operation stop control means.

Adamson teaches a transformer means including a plurality of transformers connected in parallel to the transformer driver and driven in pairs; lamp means including a plurality of lamps, each of the lamps being operated by a corresponding one of the transformers of the transformer means in order to drive several loads from one power supply circuit.

Kastner teaches operation stop control means for detecting a voltage at a midpoint of secondary windings of a transformer in the transformer means, determining from the detected voltage whether a fault exists in the transformer means and outputting an operation stop signal upon determining that the fault exists in the transformer means; and a switch-off signal to the switch upon receiving the operation stop signal from the operation stop control means (abstract) in order to deactivate the power supply when a ground fault condition is detected.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jones to include a transformer means including a plurality of transformers connected in parallel to the transformer driver and driven in pairs; lamp means

including a plurality of lamps, each of the lamps being operated by a corresponding one of the transformers of the transformer means as taught by Adamson in order to drive several loads from one power supply circuit; and it would have been obvious to modify Jones and Adamson to include an operation stop control means for detecting a voltage at a midpoint of secondary windings of a transformer in the transformer means, determining from the detected voltage whether a fault exists in the transformer means and outputting an operation stop signal upon determining that the fault exists in the transformer means; and a switch-off signal to the switch upon receiving the operation stop signal from the operation stop control means as taught by Kastner in order to deactivate the power supply when a ground fault condition is detected.

4. Claims 4, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (US 4,344,122) in view of Adamson (US 6,181,066) and in view of Kastner (US 6,570,334) and further in view of Li (US 6,359,391).

Claim 4; Jones, Adamson and Kastner disclose the claimed subject matter in regards to claim 1 supra, except for the operation stop control means includes: a latch set in response to the transformer fault signal from the transformer fault detector for holding the output of the operation stop signal to the logical operation unit until it is reset.

Li (figure 4A) teaches using a latch set in response to the transformer fault signal from the transformer fault detector for holding the output of the operation stop signal to the logical operation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jones, Adamson and Kastner to include : a latch set in

response to the transformer fault signal from the transformer fault detector for holding the output of the operation stop signal to the logical operation as taught by Li, unit until it is reset in order for the power supply to indicate that a fault exist and to latch the power supply in a safe mode of operation until the fault is cleared.

Claims 5 and 8; Jones discloses an inverter comprising: a switch (Q1) for switching a direct current (C3) operating voltage in response to a pulse width modulation (9) drive signal; a rectifier (CR1) for rectifying an output voltage from the switch (Q1); a transformer driver (Q5, Q6) for converting an output voltage from the rectifier (CR1) into an alternating current (AC) voltage; transformer means (4) for boosting an output AC voltage from the transformer driver (Q5, Q6) to levels of a lamp operating voltage; and an output driver for supplying the PWM drive signal to the switch in normal operation.

However, Jones does not operation stop control means for detecting a voltage corresponding to current flowing through each of the lamps of the lamp means, determining from the detected voltage whether an open-lamp condition has occurred, detecting a voltage at a midpoint of secondary windings of each of the transformer pairs in the transformer means, determining from the detected voltage whether a fault exists in the transformer means and outputting an operation stop signal upon determining that the open-lamp condition has occurred or that the fault exists in the transformer means; and an output driver for supplying the PWM drive signal to the switch in normal operation and a switch-off signal to the switch upon receiving the operation stop signal from the operation stop control means.

Adamson teaches a transformer means including a plurality of transformers connected in parallel to the transformer driver and driven in pairs; lamp means including a plurality of lamps,

each of the lamps being operated by a corresponding one of the transformers of the transformer means in order to drive several loads from one power supply circuit.

Kastner teaches operation stop control means for detecting a voltage at a midpoint of secondary windings of a transformer in the transformer means, determining from the detected voltage whether a fault exists in the transformer means and outputting an operation stop signal upon determining that the fault exists in the transformer means; and a switch-off signal to the switch upon receiving the operation stop signal from the operation stop control means (abstract) in order to deactivate the power supply when a ground fault condition is detected.

Li teaches operation stop control means for detecting a voltage corresponding to current flowing through each of the lamps of the lamp means, determining from the detected voltage whether an open-lamp condition has occurred in order to activate overvotlage protection when the sensing signal is higher than the protection trigger threshold in order to protect the circuit against faults. Li (figure 4A) also teaches using a latch set in response to the transformer fault signal from the transformer fault detector for holding the output of the operation stop signal to the logical operation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jones to include a transformer means including a plurality of transformers connected in parallel to the transformer driver and driven in pairs; lamp means including a plurality of lamps, each of the lamps being operated by a corresponding one of the transformers of the transformer means as taught by Adamson in order to drive several loads from one power supply circuit; and it would have been obvious to modify Jones and Adamson to include an operation stop control means for detecting a voltage corresponding to current flowing

through each of the lamps of the lamp means, determining from the detected voltage whether an open-lamp condition has occurred in order to activate overvotlage protection when the sensing signal is higher than the protection trigger threshold in order to protect the circuit against faults as taught by Li and an operation stop control means for detecting a voltage at a midpoint of secondary windings of a transformer in the transformer means, determining from the detected voltage whether a fault exists in the transformer means and outputting an operation stop signal upon determining that the fault exists in the transformer means; and a switch-off signal to the switch upon receiving the operation stop signal from the operation stop control means as taught by Kastner in order to deactivate the power supply when a ground fault condition is detected.

Allowable Subject Matter

5. Claims 2, 3, 6 and 7 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Claims 2 and 3; prior art fails to disclose or suggest, inter alia, a backlight inverter comprising: a reference signal generator for generating a sawtooth-wave reference signal based on the output voltage from the rectifier and a DC input voltage; a voltage selector for selecting a higher one of the voltage detected by the over-voltage detector and the voltage detected by the lamp voltage detector; comparison means including a first comparator for comparing the voltage

selected by the voltage selector with an internal reference voltage for over-voltage determination and providing a signal indicative of whether an over-voltage has been generated, and a second comparator for comparing an output signal from the first comparator with the sawtooth-wave reference signal from the reference signal generator and providing a duty cycle adjustment signal based on the generation of the over-voltage; and a logical operation unit for ORing an inverted version of the duty cycle adjustment signal from the comparison means and the operation stop signal from the operation stop control means and providing the ORed result to the output driver.

Claims 6 and 7; prior art fails to disclose or suggest, inter alia, a backlight inverter comprising: a reference signal generator for generating a sawtooth-wave reference signal based on the output voltage from the rectifier and a DC input voltage; a voltage selector for selecting a higher one of the voltage detected by the over-voltage detector and the voltage detected by the lamp voltage detector; comparison means including a first comparator for comparing the voltage selected by the voltage selector with an internal reference voltage for over-voltage determination and providing a signal indicative of whether an over-voltage has been generated, and a second comparator for comparing an output signal from the first comparator with the sawtooth-wave reference signal from the reference signal generator and providing a duty cycle adjustment signal based on the generation of the over-voltage; and a logical operation unit for ORing an inverted version of the duty cycle adjustment signal from the comparison means and the operation stop signal from the operation stop control means and providing the ORed result to the output driver.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L. Laxton whose telephone number is (571) 272-2079. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2084. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

1/7/05

Gary L. Laxton
Patent Examiner
Art Unit 2838